

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-31. (Previously Canceled)

32. (Currently Amended) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first bone engagement surface securable to a first vertebral body, the first bone engagement surface comprising at least one bone engagement feature;

a second bone engagement surface securable to a second vertebral body, the second bone engagement surface comprising at least one bone engagement feature; and

an articulating structure comprising first and second articulating surfaces positioned between the first and second bone engagement surfaces, at least one of the first and second articulating surfaces ~~comprising a sloping partial cylinder, comprising a constantly sloped section to provide a correction angle when the prosthesis is in a neutral position, the constantly sloped section crossing the coronal plane of the first and second vertebral bodies, the articulating structure further comprising third and fourth articulating surfaces positioned between the first and second bone engagement surfaces, each of the third and fourth articulating surfaces comprising a planar portion, the planar portions positioned to be in surface contact with one another when the prosthesis is in the neutral position,~~ wherein the articulating structure ~~nonresiliently~~ urges the first and second bone engagement surfaces toward a relative anterior/posterior orientation that provides a preferred lordotic angle between the first and second vertebral bodies.

33. (Currently Amended) The intervertebral disc prosthesis of claim 32, wherein an anterior portion of the ~~sloping partial cylinder has a greater thickness~~ constantly sloped section is higher than a posterior portion of the ~~sloping partial cylinder~~ constantly sloped section to correct lordosis, wherein the preferred lordotic angle is greater than zero.

34. (Previously Presented) The intervertebral disc prosthesis of claim 32, wherein the preferred lordotic angle is selected from the group consisting of 0, 3 and 6 degrees.

35. (Previously Presented) The intervertebral disc prosthesis of claim 32, further comprising a first end plate comprising the first bone engagement surface, the first end plate further comprising the first articular surface, wherein the first articular surface cooperates with the second articular surface to urge the first and second bone engagement surfaces toward the anterior/posterior orientation.

36. (Previously Presented) The intervertebral disc prosthesis of claim 35, further comprising a second end plate comprising the second bone engagement surface, the second end plate further comprising the second articular surface, wherein the second articular surface cooperates with the first articular surface to urge the first and second bone engagement surfaces toward the anterior/posterior orientation.

37. (Currently Amended) The intervertebral disc prosthesis of claim ~~32~~ 33, wherein the articular structure comprises a nucleus formed separately from the first and second bone engagement surfaces, the nucleus comprising the first and ~~second~~ third articular surfaces.

38. (Currently Amended) The intervertebral disc prosthesis of claim 37, further comprising a first end plate comprising the first bone engagement surface and a second end plate comprising the second bone engagement surface, wherein the first end plate comprises ~~a third~~ the second articulating surface positioned to articulate with the first articular surface of the nucleus, and the second end plate comprises ~~a the~~ the fourth articulating surface positioned to articulate with the ~~second~~ third articular surface of the nucleus.

39-40. (Canceled)

41. (Currently Amended) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first essentially flat bone engagement surface securable to a first vertebral body;
a second essentially flat bone engagement surface securable to a second vertebral body;
a nucleus positioned between the first and second bone engagement surfaces, a first articular surface formed on the nucleus, a planar third surface formed on the nucleus opposite the first articular surface; a first articular surface comprising a sloping partial cylinder, the first articular surface further comprising a first orientation feature, the first orientation feature comprising a first straight section formed on the first articular surface, the first straight section having a constant non-zero slope oriented with respect to the third surface to provide a corrective angle; and

a second articular surface that articulates with the first articular surface, the second articular surface ~~comprising a second orientation feature that cooperates~~ shaped to mate with the constantly sloped first orientation feature straight section in the neutral position to urge the first and second bone engaging surfaces toward ~~an preferred~~ orientation of the first bone engagement surface relative to the second bone engagement surface that provides a deformity correction across ~~about~~ at least one axis.

42. (Canceled)

43. (Currently Amended) The intervertebral disc prosthesis of claim ~~42~~41, wherein the first straight section is positioned adjacent to and contiguous with a first curved section of the first articular surface, wherein the first straight section has a radius of curvature different from a radius of curvature of the first curved section.

44. (Currently Amended) The intervertebral disc prosthesis of claim ~~42~~41, wherein the second ~~orientation feature~~ articular surface comprises a second straight section formed on the second articular surface.

45. (Currently Amended) The intervertebral disc prosthesis of claim 44, wherein the first ~~flattened~~ straight section ~~comprises the sloping partial cylinder, the sloping partial cylinder is~~ positioned longitudinally between and contiguous with first and second convexly curved sections of the first articular surface, wherein the second straight section ~~comprises a cylindrical surface~~ is shaped to mate with the ~~partial cylinder~~ first straight section.

46-47. (Canceled)

48. (Currently Amended) The intervertebral disc prosthesis of claim 41, further comprising a first end plate securable to the first vertebral body, wherein the first end plate comprises the first bone engagement surface, wherein the first end plate further comprises the second articulating surface.

49. (Canceled)

50. (Previously Presented) The intervertebral disc prosthesis of claim 48, further comprising a second end plate securable to the second vertebral body, wherein the second end plate comprises the second bone engagement surface.

51. (Currently Amended) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first end plate securable to a first vertebral body, the first end plate comprising a first articular surface comprising a first straight portion in at least one cross section;

a second end plate securable to a second vertebral body; and

a nucleus positionable between the first and second end plates, the nucleus comprising a second articular surface that articulates with the first articular surface, the second articular surface comprising a first straight section sloping between and contiguous with first and second convexly curved sections of the second articular surface, the nucleus further comprising a planar fourth articular surface opposite the second articular surface;

wherein the height of the nucleus between the second articular surface and the fourth articular surface at the junction of the first convexly curved section and the first straight section is greater than the height of the nucleus between the second articular surface and the fourth articular surface at the junction of the second convexly curved section and the first straight section;

wherein the first straight section rests against the first straight portion in a relative orientation between the first and second end plates that provides a preferred lordotic angle between the first and second vertebral bodies.

52. (Currently Amended) The intervertebral disc prosthesis of claim 51, wherein the second end plate comprises a third articular surface, the third articular surface comprising a second straight portion in at least one cross section, wherein the ~~nucleus comprises a fourth articular surface that~~ articulates with the third articular surface.

53. (Currently Amended) The intervertebral disc prosthesis of claim 52, ~~wherein the~~ the fourth articular surface comprising, in at least one cross section, a second straight section ~~portion is~~ positioned between and contiguous with first and second curved sections of the ~~fourth~~ third articular surface, wherein the ~~second straight section~~ fourth articular surface rests against the second straight portion in a relative orientation between the first and second end plates that provides a the preferred lordotic angle between the first and second vertebral bodies.

54. (Previously Presented) The intervertebral disc prosthesis of claim 51, wherein an anterior portion of the nucleus has greater thickness than a posterior portion of the nucleus to correct lordosis, wherein the preferred lordotic angle is greater than zero.

55. (Previously Presented) The intervertebral disc prosthesis of claim 51, wherein the preferred lordotic angle is selected from the group consisting of 0, 3 and 6 degrees.

56. (Previously Presented) The intervertebral disc prosthesis of claim 51, wherein at least one of the first and second end plates further comprises a stop member positioned to abut the vertebral body to prevent the prosthesis from migrating from its intended position between the first and second vertebral bodies.

57. (Canceled)

58. (Currently Amended) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first end plate securable to a first vertebral body, comprising:

a plurality of bone engagement features shaped to penetrate bone; ~~and~~

a perimeter wall;

a first articular surface comprising: a planar portion intersecting the perimeter wall; a straight portion in at least one cross section; and a pair of individual projections which protrude from the planar portion on opposing sides of the straight portion;

a second end plate securable to a second vertebral body, comprising:

a plurality of bone engagement features shaped to penetrate bone; and

a second articular surface that is substantially entirely flat; and

a nucleus positionable between the first and second end plates, the nucleus comprising:

a third articular surface that articulates with the first articular surface, the third articular surface comprising a first straight section sloping between and contiguous with first and second curved sections of the third articular surface, wherein the first straight section rests against the straight portion in a relative orientation between the first and second end plates that provides a preferred lordotic angle between the first and second vertebral bodies, the nucleus further comprising a fourth articular surface that articulates with the second articular surface to permit medial-lateral and anterior-posterior articulation between the nucleus and the second end plate.

59. (Previously Presented) The intervertebral disc prosthesis of claim 58, wherein the fourth articular surface comprises a second straight section.

60. (Previously Presented) The intervertebral disc prosthesis of claim 58, wherein an anterior portion of the nucleus has a greater thickness than a posterior portion of the nucleus to provide the preferred lordotic angle.

61. (Previously Presented) The intervertebral disc prosthesis of claim 58, wherein at least one of the first and second end plates further comprises a stop member positioned to abut the vertebral body to prevent the prosthesis from migrating from its intended position between the first and second vertebral bodies.

62. (Canceled)

63. (Previously Presented) The intervertebral disc prosthesis of claim 58, wherein the second articular surface comprises a trough, wherein the trough is larger than the fourth articular surface in at least one of the anterior-posterior and medial-lateral dimensions to permit translation between the nucleus and the second end plate.

64. (Currently Amended) The intervertebral disc prosthesis of claim 32, further comprising:
an endplate, wherein the endplate comprises at least one of the first and second bone engagement surfaces; and
wherein the ~~sloping partial cylinder~~ constantly sloped section is translatable with respect to the endplate in at least one of the anterior-posterior and medial-lateral directions.

65. (Currently Amended) The intervertebral disc prosthesis of claim 32, further comprising:
an endplate, wherein the endplate comprises at least one of the first and second bone engagement surfaces; and
wherein the endplate comprises the ~~sloping partial cylinder~~ constantly sloped section.

66. (Currently Amended) The intervertebral disc prosthesis of claim 41, wherein the first straight section is positioned at an angle relative to the second bone engaging surface when the first and second bone engaging surfaces are in the ~~preferred orientation~~ that provides the deformity correction, wherein the angle is greater than zero.

67. (Canceled)

68. (New) The intervertebral disc prosthesis of claim 41, wherein the nucleus is formed of an elastomer.

69. (New) The intervertebral disc prosthesis of claim 68, wherein the elastomer is a low friction elastomer.

70. (New) The intervertebral disc prosthesis of claim 58, wherein the nucleus is formed of an elastomer.

71. (New) The intervertebral disc prosthesis of claim 70, wherein the elastomer is a low friction elastomer.